CURRICULUM VITA

WILLIAM D. COLLINS

TITLE: Senior Scientist
Earth Sciences Division
Lawrence Berkeley Laboratory
Berkeley, California

Professor in Residence
Department of Earth and Planetary Science
University of California, Berkeley
Berkeley, California

EDUCATION:

B.A.,	Physics (cum laude)	Princeton University, 1981
M.S.,	Astronomy and Astrophysics	University of Chicago, 1984
Ph.D.,	Astronomy and Astrophysics	University of Chicago, 1988

PROFESSIONAL EXPERIENCE:

1989 – 1990, Post-Graduate Research Associate, University of Chicago
1990 – 1992, Post-Graduate Research Associate, Scripps Institution of Oceanography
1992 – 1997, Assistant Research Physicist, Scripps Institution of Oceanography
1994 – 1994, Lecturer, Scripps Institution of Oceanography
1996 – 1997, Visiting Scientist, National Center for Atmospheric Research
1997 – 2001, Scientist II, National Center for Atmospheric Research
2001 – 2007, Scientist III, National Center for Atmospheric Research
2001 – 2007, Adjunct Professor, PAOS Program, University of Colorado
2006 – 2007, Deputy Section Head, National Center for Atmospheric Research
2007 – 2008, Senior Scientist, National Center for Atmospheric Research
2007 – present, Senior Scientist, Lawrence Berkeley National Laboratory
2007 – present, Department Head, Lawrence Berkeley National Laboratory
2007 – present, Professor in Residence, University of California, Berkeley
2013 – present, Chief Scientist, Dept. of Energy Accelerated Climate Model for Energy
2013 – present, Director, Climate Readiness Institute

PUBLICATIONS:

1 Dissertations

B.A. Thesis: Thermodynamics of apparent horizons, 1981, Princeton University, 38 pp.

Ph.D. Thesis: The theory of magnetohydrodynamic wave generation by localized sources, 1988, University of Chicago, University of Michigan Microfilms No. T-30997.

2 Reviewed Publications

(Asterisks indicate publications based upon B.A. and Ph.D. theses.)

2.1. Collins, W.D., and M. Turner, 1984: Thermal production of superheavy magnetic monopoles in the new inflationary universe scenario. *Physical Review D*, **29**, 2158–2161.

2.2. Collins, W.D., 1989: The theory of magnetohydrodynamic wave generation by localized sources I. General asymptotic theory. *The Astrophysical Journal*, **337**, 548–567.

2.3. Collins, W.D., 1989: The theory of magnetohydrodynamic wave generation by localized sources II. Collisionless dissipation of wave packets. *The Astrophysical Journal*, **343**, 499–506.

2.4. Ramanathan, V., and W.D. Collins, 1991: Thermodynamic regulation of ocean warming by cirrus clouds deduced from observations of the 1987 El Niño. *Nature*, **351**, 27–32.

2.5. Collins, W.D., 1992: The theory of magnetohydrodynamic wave generation by localized sources III. Efficiency of plasma heating by dissipation of far-field waves. *The Astrophysical Journal*, **384**, 319–332.

2.6. Collins, W.D., 1992: Mechanics of apparent horizons. *Physical Review D15*, **45**, 495–498.

2.7. Ramanathan, V., and W. Collins, 1992: Thermostat and global warming. *Nature*, **357**, 649.

2.8. Ramanathan, V., and W. Collins, 1993: A thermostat in the tropics. *Nature*, **361**, 410–411.

2.9. Ramanathan, V., W.D. Collins, and B. Subasilar, 1994: Comment on the paper "An inquiry into the cirrus-cloud thermostat effect for tropical sea surface temperature" by K.M. Lau, C.H. Sui, M.D. Chou, and W.K. Tau. *Geophys. Res. Lett.*, **21**, 1185–1186.

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2.11. Collins, W.D., and A.K. Inamdar, 1995: Validation of clear-sky fluxes for tropical oceans from the Earth Radiation Budget Experiment. *J. Climate*, **8**, 569–578.

2.12. Lohmann, U., E. Roeckner, W.D. Collins, A. Heymsfield, and G. McFarquhar, 1995: The role of water vapor and convection during the Central Equatorial Pacific Experiment (CEPEX) from observations and model simulations. *J. Geophys. Res.*, **100**, 26229–26245.

2.13. Waliser, D.E., W.D. Collins, and S.P. Anderson, 1995: An estimate of the surface shortwave cloud forcing over the western Pacific during TOGA COARE. *Geophys. Res. Lett.*, **23**, 519–522.

2.14. Collins, W.D., F.P.J. Valero, P. Flatau, H. Grassl, and P. Pilewskie, 1996: The radiative effects of convection in the tropical Pacific. *J. Geophys. Res.*, **101**, 14999–15012.

2.15. Valero, F.P.J., W.D. Collins, P. Pilewskie, P. Flatau, and A. Bucholtz, 1997: Direct radiometric observations of the water vapor super greenhouse effect over the equatorial Pacific ocean. *Science*, **275**, 1773–1776.

2.16. Collins, W.D., J. Wang, J.T. Kiehl, G.J. Zhang, D. Cooper, and W. Eichinger, 1997: Comparison of tropical ocean-atmosphere fluxes with the NCAR Community Climate Model CCM3. *J. Climate*, **10**, 3047–3058.

2.17. Zender, C.S., S. Pope, B. Bush, W.D. Collins, J.T. Kiehl, F.P.J. Valero, and J. Vitko, 1997: Atmospheric absorption during ARESE. *J. Geophys. Res.*, **102**, 29901–29915.

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2.20. Jayaraman, A., D. Lubin, S. Ramachandran, V. Ramanathan, E. Woodbridge, W.D. Collins, and K.S. Zalpuri, 1998: Direct observations of aerosol radiative forcing over the tropical Indian Ocean during the Jan.–Feb. 1996 pre-INDOEX cruise. *J. Geophys. Res.*, **103**, 13827–13836.

2.21. Kandel, R., M. Viollier, P. Raberanto, J.Ph. Duvel, L.A. Pakhomov, V.A. Golovko, A.P. Trishchenko, J. Mueller, E. Raschke, R. Stuhlmann, and the International ScaRaB Scientific Working Group, 1998: The ScaRaB Earth Radiation Budget Dataset. *Bull. Amer. Meteor. Soc.*, **79**, 765–783.

2.22. Collins, W.D., 1998: A global signature of enhanced shortwave absorption by clouds. *J. Geophys. Res.*, **103**, 31669–31679.

2.23. van Hees, R.M., J. Lelieveld, and W.D. Collins, 1999: Detecting tropical convection using AVHRR satellite data. *J. Geophys. Res.*, **104**, 9213–9228.

2.24. Wu, X., W.D. Hall, W.W. Grabowski, M.W. Moncrieff, W.D. Collins, and J.T. Kiehl, 1999: Long-term behavior of cloud systems in TOGA COARE and their interactions with radiative and surface processes, part II: Effects of microphysics on cloud-radiation interaction. *J. Atmos. Sci.*, **56**, 3177–3195.

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2.26. Bony, S., W.D. Collins, and D.W. Fillmore, 2000: Indian Ocean low clouds during the winter monsoon. *J. Climate*, **13**, 2028–2043.

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2.28. Collins, W.D., 2001: Effects of enhanced shortwave absorption on coupled simulations of the tropical climate system. *J. Climate*, **14**, 1147–1165.

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6 Presentations

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68. Jones, A., M.S. Torn, W.J. Riley, and W. Collins, 2010: Factors Driving Biofuel Crops' Influence on Climate. Abstract B22D-07, 2010 Fall AGU Meeting, San Francisco, CA.

69. Murphy, L.N., W.J. Riley, M.S. Torn, and W. Collins, 2010: Expansion of woody biomass for bioenergy feedstock in the Southeastern US has local and remote climate impacts. Abstract B23D-0419, 2010 Fall AGU Meeting, San Francisco, CA.

70. Feldman, D., W. Collins, C. Algieri, and J. Ong, 2010: Spectral Forcing and Feedback Signals in IPCC Simulations: Simulations of Next-Generation Observing Systems. Abstract GC41B-0896, 2010 Fall AGU Meeting, San Francisco, CA.

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73. Collins, W., Feldman, D., C. Algieri, and J. Ong, 2010: Climate Change Time-to-Detection Simulations using IPCC Models for Shortwave Forcings and Feedbacks. Abstract GC53C-04, 2010 Fall AGU Meeting, San Francisco, CA.

74. Collins, W.D, and D.R. Feldman, 2011: The future evolution of the Earth's reflected shortwave spectrum. Abstract 8.3, 23rd Conference on Climate Variability and Change, 91st American Meteorological Society Annual Meeting, Seattle, WA. William D. Collins, University of California, Berkeley, CA.

75. Li, F., W. Collins, M.F. Wehner, D.L. Williamson, and J.G. Olson, 2011: Impact of horizontal resolution on simulation of precipitation extremes in an aqua-planet version of the Community Atmosphere Model. Abstract, PM10A.4, 23rd Conference on Climate Variability and Change, 91st American Meteorological Society Annual Meeting, Seattle, WA.

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79. Collins, W., F. Li, D. Rosa, and M.F. Wehner, 2011: "Super-Parameterization"–A Better Way to Simulate Regional Extreme Precipitation?, Abstract GC13C-04, presented at 2011 Fall Meeting, AGU, San Francisco, CA, 5–9 Dec.

80. Feldman, D., and W. Collins, 2011: Pan-Spectral Signatures of Climate Change and Prospects for Observational Constraints, Abstract GC11B-0910, presented at 2011 Fall Meeting, AGU, San Francisco, CA, 5–9 Dec.

81. Gunn, L.N., and W. Collins, 2011: Long-wave radiative forcing due to desert dust, Abstract A51E-07, presented at 2011 Fall Meeting, AGU, San Francisco, CA, 5–9 Dec.

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83. Jones, A.D., L.P. Chini, W. Collins, A.C. Janetos, J. Mao, X. Shi, A.M. Thomson, and M.S. Torn, 2011: Regional-Scale Forcing and Feedbacks from Alternative Scenarios of Global-Scale Land Use Change, Abstract GC22C-06, presented at 2011 Fall Meeting, AGU, San Francisco, CA, 5–9 Dec.

84. Li, F., W. Collins, M.F. Wehner, D. Williamson, and J.G. Olson, 2011: Impact of Horizontal Resolution on the Simulation of Tropical Storms in an Idealized Climate Model, Abstract A23D-0203, presented at 2011 Fall Meeting, AGU, San Francisco, CA, 5–9 Dec.

85. Nolan, L., and W. Collins, 2011: The Effects of Cloud-Scale Physics Variability on Convection, Abstract A13B-0250, presented at 2011 Fall Meeting, AGU, San Francisco, CA, 5-9 Dec.

86. Prabhat, M., S. Byna, C. Paciorek, G. Weber, K. Wu, T. Yopes, M.F. Wehner, G. Ostrouchov, D. Pugmire, R. Strelitz, W. Collins, and W. Bethel, 2011: Pattern Detection and Extreme Value Analysis on Large Climate Data, Abstract IN41C-03, presented at 2011 Fall Meeting, AGU, San Francisco, CA, 5–9 Dec.

87. Pressel, K.G., W. Collins, and A.R. Desai, 2011: Scaling of water vapor in the mesogamma (2-20km) and lower meso-beta (20-50km) scales from tall tower time series, Abstract A54A-01, presented at 2011 Fall Meeting, AGU, San Francisco, CA, 5–9 Dec.

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91. Rubin, J.I., and W. Collins, 2011: Investigation of Aerosol Radiative Forcing with Multi-Wavelength Data Assimilation, Abstract A53C-0377, presented at 2011 Fall Meeting, AGU, San Francisco, CA, 5–9 Dec.

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93. Feldman, D. and W. Collins, 2012: Characteristics of Observing Systems that Differentiate Climate Models According by Their Low-Cloud Feedback Strengths, Abstract A21I-07, presented at 2012 Fall Meeting, AGU, San Francisco, CA.

94. Gunn, L.N. and W. Collins, 2012: Longwave radiative forcing due to dust aerosols: Observations and climatology comparisons, Abstract A13K-0334, presented at 2012 Fall Meeting, AGU, San Francisco, CA.

95. Jones, A.D. W. Collins, M.S. Torn and K.V. Calvin, 2012: Climate implications of including albedo effects in terrestrial carbon policy, Abstract GC11B-0982, presented at 2012 Fall Meeting, AGU, San Francisco, CA.

96. O'Brien, T.A. W. Collins, F. Li, S. Rauscher, T. Ringler, M.A. Taylor, S.M. Hagos, and L. Leung, 2012: Observational Constraints on Scale Awareness: Illumination of Scale Incognizance in CAM, Abstract A43G-0233, presented at 2012 Fall Meeting, AGU, San Francisco, CA.

97. Roberts, Y., P. Pilewskie, B.C. Kindel, D. Feldman, and W. Collins, 2012: Temporal Variability of Observed and Simulated Hyperspectral Earth Reflectance, Abstract A23E-0280, presented at 2012 Fall Meeting, AGU, San Francisco, CA.

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99. Du, E., A.V. Di Vittorio, and W. Collins, 2013: Performance evaluation and uncertainty analysis of hydrologic components of the CESM/iESM, Abstract H21C-1053 presented at 2013 Fall Meeting, AGU, San Francisco, CA, 9–13 December.

100. Feldman, D., W. Collins, and X. Liu, 2013: Shortwave and Longwave Hyperspectral Satellite Instrument Simulations Based on High and Low Sensitivity CMIP5 Models and Applications to Existing and Planned Measurement Systems, Abstract A43K-01 presented at 2013 Fall Meeting, AGU, San Francisco, CA, 9–13 December.

101. Holm, J.A., J.Q. Chambers, and W. Collins, 2013: Impacts of continual and periodic disturbances on a Central Amazonian forest: Lessons from a gap model for future model improvement, Abstract B51L-07 presented at 2013 Fall Meeting, AGU, San Francisco, CA, 9–13 December.

102. Jeon, S., M. Prabhat, S. Byna, W. Collins, and M.F. Wehner, 2013: Event Detection and Spatial Analysis for Characterizing Extreme Precipitation, Abstract H41J-1364 presented at 2013 Fall Meeting, AGU, San Francisco, CA, 9–13 December.

103. Jones, A.D., W. Collins, and M.S. Torn, 2013: Pattern scaling of land-use change climate response relationships, Abstract GC42A-07 presented at 2013 Fall Meeting, AGU, San Francisco, CA, 9–13 December.

104. O'Brien, T.A., W. Collins, S. Rauscher, and T. Ringler, 2013: Fractal behavior drives resolution dependent vertical velocity fields, Abstract NG41A-1659 presented at 2013 Fall Meeting, AGU, San Francisco, CA, 9–13 December.

105. Paige, J., D. Feldman, and W. Collins, 2013: An Assessment of Arctic Cloud-Albedo Feedbacks in the CMIP5 Archive and Prospects for Satellite Instrument Constraint, Abstract A21B-0032 presented at 2013 Fall Meeting, AGU, San Francisco, CA, 9–13 December.

106. Prabhat, M., S. Byna, V. Vishwanath, W. Bethel, W. Collins, and M.F. Wehner, 2013: TECA: Extreme Climate Analytics on Petascale Platforms, Abstract IN53B-1568 presented at 2013 Fall Meeting, AGU, San Francisco, CA, 9–13 December.

107. Roberts, Y., P.C. Taylor, C. Lukashin, D. Feldman, P. Pilewskie, and W. Collins, 2013: Climate Model Validation Using Spectrally Resolved Shortwave Radiation Measurements, Abstract A43K-07 presented at 2013 Fall Meeting, AGU, San Francisco, CA, 9–13 December.

108. Wang, H., W.J. Riley, and W. Collins, 2013: Evaluating terrestrial ecosystem model performance: An application of uncertainty in eddy covariance CO2 flux measurements, Abstract B11E-0397 presented at 2013 Fall Meeting, AGU, San Francisco, CA, 9–13 December.

109. Wehner, M.F., C.J. Paciorek, M. Prabhat, H. Krishnan, W. Collins, and W. Bethel, 2013: Extreme value statistics of large climate modeled and observed datasets, Abstract IN24A-03 presented at 2013 Fall Meeting, AGU, San Francisco, CA, 9–13 December.

110. Williams, I.N., M.S. Torn, W.J. Riley, M.F. Wehner, and W. Collins, 2013: Climate extremes and ecosystem productivity in global warming simulations, Abstract B13M-03 presented at 2013 Fall Meeting, AGU, San Francisco, CA, 9–13 December.

111. Feldman, D.R., and W.D. Collins, 2014: Shortwave and Longwave Hyperspectral Satellite Instrument Simulations With Models of Varying Climate Sensitivity and Applications to Existing and Planned Measurement Systems. Abstract EGU2014-4586, presented at the 2014 EGU General Assembly, 27 April 2 May, Vienna, Austria.

6.2 Conference Presentations and Talks

1. Collins, W.D., J.T. Kiehl, J. Wang, and G.J. Zhang, 1996: Validation of the NCAR community climate model with TOGA COARE observations. *Eighth Conference on Air-Sea Interaction*, 76th AMS Annual Meeting, Jan. 28–Feb. 2, 1996, Atlanta, Georgia (American Meteorological Society, Boston).

2. Zhang, G.J., J.T. Kiehl, W.D. Collins, and J. Wang, 1996: Sensitivity of surface evaporation in the tropical Pacific to treatment of convection in the NCAR climate model. *Eighth Conference on Air-Sea Interaction*, 76th AMS Annual Meeting, Jan. 28–Feb. 2, 1996, Atlanta, Georgia (American Meteorological Society, Boston).

3. Zender, C.S., S. Pope, B. Bush, W.D. Collins, J.T. Kiehl, F.P.J. Valero, and J. Vitko, 1997: Atmospheric absorption during ARESE. *Ninth Conference on Atmospheric Radiation*, 77th AMS Annual Meeting, Feb. 2–7, 1997, Long Beach, California (American Meteorological Society, Boston).

4. Collins, W.D., 1998: A global signature of enhanced shortwave absorption by clouds. Gordon Conference on Solar Radiation and Climate, Plymouth State College, Jun. 15–19, 1998, Plymouth, New Hampshire.

5. Collins, W.D., 1998: The atmospheric radiative heating rate during COARE: Estimation from observations and model simulations. *Proceedings of a conference on the TOGA Coupled Ocean-Atmosphere Response Experiment (COARE)* (World Climate Research Program, Geneva), WCRP-107, WMO/TD-No. 940, Jul. 7–14, 1998, Boulder, Colorado.

6. Collins, W.D., P.J. Rasch, and B.E. Eaton, 1999: Forecasting aerosols using a CTM with assimilation of satellite aerosol retrievals. Workshop on Mineral Dust, Jun. 9–11, 1999, Boulder, Colorado.

7. Collins, W.D., P.J. Rasch, and B.E. Eaton, 1999: A prototype global aerosol analysis using assimilation of satellite retrievals of aerosol optical thickness. NCAR ACD Workshop on Chemical Data Assimilation and Applications to Satellite Observations, Nov. 8–9, 1999, Boulder, Colorado.

8. Valero, F.P.J., S.K. Pope, and W.D. Collins, 2000: ScaRaB, GOES-8, aircraft and surface observations of the absorption of solar radiation by clouds. Gordon Conference on Solar Radiation and Climate, Connecticut College, Jun. 24–29, 2000, New London, Connecticut.

9. Collins, W.D., 2001: New treatments of radiative processes in the NCAR Community Climate Model. 8th Scientific Assembly of the International Association of Meteorology and Atmospheric Sciences, Jul. 10–18, 2001, Innsbruck, Austria.

10. Collins, W.D, 2001: Improved estimates of global atmospheric shortwave absorption by aerosols in clear and cloudy atmospheres. Chapman Conference on Atmospheric Absorption of Solar Radiation, Aug. 13–17, 2001, Estes Park, Colorado.

11. Fillmore, D.W., and W.D. Collins, 2001: Evidence for enhanced shortwave absorption over the tropical Pacific from collocated satellite and buoy observations. Chapman Conference on Atmospheric Absorption of Solar Radiation, Aug. 13–17, 2001, Estes Park, Colorado.

12. Collins, W.D. and D.W. Fillmore, 2002: Effects of clouds on direct radiative forcing by absorptive aerosols. *11th Conference on Atmospheric Radiation*, Jun. 3–7, 2002, Ogden, Utah (American Meteorological Society, Boston).

13. Collins, W.D., 2002: Overview of aerosol/climate interactions and radiative forcing: Parts I and II. NCAR ASP Summer Colloquium, "Interactions among Aerosols, Climate, and the Hydrological Cycle," Jul. 8–19, 2002, Boulder, Colorado.

14. Collins, W.D., 2002: Techniques of aerosol assimilation. NCAR ASP Summer Colloquium, "Interactions among Aerosols, Climate, and the Hydrological Cycle," Jul. 8–19, 2002, Boulder, Colorado.

15. Mlynczak, M., D. Johnson, K. Jucks, W. Traub, G. Bingham, P. Yang, C. Mertens, L. Gordley, B. Smith, W. Collins, C.R. Hyde, and S. Wellard, 2003: The Far-Infrared Spectroscopy of the Troposphere (FIRST) Project–A new instrument for AURA validation. AURA Validation Workshop, Mar. 18–21, 2003.

16. Mlynczak, M., D. Johnson, K. Jucks, W. Traub, G. Bingham, D. Kratz, P. Yang, C. Mertens, L. Gordley, B. Smith, W. Collins, J. Harries, R. Rizzi, C.R. Hyde, and S. Wellard, 2003: The Far-Infrared Spectroscopy of the Troposphere (FIRST) Project. Advanced Infrared Technology (AITA) Workshop, Sep. 2003, Pisa, Italy.

17. Collins, W.D., 2003: Effects of aerosols on regional and global climate. Workshop on Global Aerosol Measurements for Climate Studies: Present and Future, Sep. 17, 2003, Paris, France.

18. Collins, W.D., P.J. Rasch, A. Conley, and D. Fillmore, 2003: Regional and global effects of anthropogenic aerosols on the hydrological cycle. International Conference on Earth System Modeling, Sep. 19, 2003, Hamburg, Germany.

19. Collins, W.D., 2004: Cloud feedbacks in the NCAR Community Climate System Model CCSM3. Joint WGCM CFMIP/IPCC expert meeting on Climate Sensitivity and Feedbacks, Apr. 19–22, 2004, Exeter, UK.

20. Collins, W.D., 2004: Estimates of regional and global forcing: How good are our models? Aspen Global Change Institute symposium, "Aerosols and the Hydrological Cycle," Jul. 11–17, 2004, Aspen, Colorado.

21. Collins, W.D., D.W. Fillmore, V. Ramaswamy, and M.D. Schwarzkopf, 2004: Comparison of radiative forcings from GCMs and line-by-line models. IPCC Workshop on Climate Sensitivity, Jul. 26–29, 2004, Paris, France.

22. Collins, W.D., 2004: Radiative transfer and forcing. IPCC Workshop on Climate Sensitivity, Jul. 26–29, 2004, Paris, France.

23. Charlock, T.P., F.G. Rose, D. Rutan, D.W. Fillmore, and W.D. Collins, 2004: All-sky aerosol direct forcing to SW and LW at TOA and surface using CERES Terra and the MATCH assimilation. International Radiation Symposium 2004, "Current Problems in Atmospheric Radiation," Aug. 23–28, 2004, Busan, South Korea.

24. Lamarque, J.F., J. Kiehl, G. Brasseur, T. Butler, P. Cameron-Smith, W.D. Collins, W.J. Collins, C. Granier, D. Hauglustaine, P. Hess, E. Holland, L. Horowitz, M. Lawrence, D. McKenna, P. Merilees, L. Mickley, M. Prather, P. Rasch, D. Rotman, D. Shindell, and P. Thornton, 2004: Nitrogen deposition evolution in the 21st century under the A2-scenario: A multi-model multi-climate analysis. Eighth International Global Atmospheric Chemistry Conference, Sep. 4–9, 2004, Christchurch, New Zealand.

25. Holland, E.A, J.-F. Lamarque, J. Sulzman, G. Brasseur, T. Butler, P. Cameron-Smith, W.D. Collins, W.J. Collins, P. Hess, D. Hauglustain, J. Kiehl, D. McKenna, M. Lawrence, H. Levy, D. Shindell, 2004: Evaluation of nitrogen deposition in precipitation: A multi-model comparison with EMEP and NADP measurements. Eighth International Global Atmospheric Chemistry Conference, Sep. 4–9, 2004, Christchurch, New Zealand.

26. Collins W.D., G.A. Meehl, T.M.L. Wigley, and H. Teng, 2005: Simulations of committed climate change and sea-level rise through 2400 AD. US Climate Change Science Program (CCSP) Workshop "Climate Science in Support of Decision Making," Nov. 14–16, 2005, Arlington, Virginia.

27. Collins, W.D., and A.J. Conley, 2006: New methods for representing transmission in radiative parameterizations. EGU General Assembly, Apr. 2–7, 2006, Vienna, Austria.

28. Sun, D.Z., T. Zhang, C. Covey, S. Klein, W. Collins, J.J. Hack, J. Kiehl, G.A. Meehl, I.M. Held, and M. Suarez, 2007: Atmospheric Feedbacks Over the Pacific Cold-Tongue: Results From Models and Observations. 3rd WGNE Workshop on Systematic Errors in Climate and NWP Models, Feb. 12–16, 2007, San Francisco, California.

29. Iacono, M., W. Collins, and P. Rasch, 2008: Evaluating the Impact of RRTMG/McICA in the NCAR CAM3.5 Climate Model, ARM Science Team Meeting, Mar. 10–14, 2008, Norfolk, Virginia.

30. Collins, W.D., 2009: "Climate modeling." Carbon cycle 2.0 Retreat, Oct. 12–13, 2009, Chaminade Resort and Spa, Santa Cruz, CA.

31. Kiparsky, M., W. Collins, D. Groves, M. Hanemann, B. Joyce, D. Purkey, and C. Young, 2009: "Hydrology And Water Operations Modeling for Climate Change Risk Assessment in California's Southern Central Valley". AWRA 2009 Spring Specialty Conference: Managing Water Resources Development in a Changing Climate. May 4–6, 2009, Anchorage, Alaska.

32. Kato, S., S. Sun-Mack, W.F. Miller, F.G. Rose, B.A. Wielicki, D.M. Winker, G. Stephens, P. Minnis, N.G. Loeb, T.P. Charlock, P.W. Stackhouse, K.-M. Xu, and W.D. Collins, 2009: "CALIPSO, CloudSat, CERES, and MODIS merged product." Earthcare Workshop, Kyoto, Japan, June 10–12, 2009.

33. Collins, W.D., 2010: "A future with(out) CC2.0." Carbon Cycle 2.0 Symposium, Feb.1 2010, LBNL.

34. de Boer, G., W.D. Collins, S. Menon, E. Hunke, and E.W. Eloranta, 2010: "Quantifying seasonal influence of stratiform mixed-phase clouds on Arctic sea ice growth rates," International Glaciological Society Symposium on Sea Ice in the Physical and Biogeochemical System, Tromso, Norway, May 30–June 4.

35. de Boer, G., W.D. Collins, S. Menon, E. Hunke, and E.W. Eloranta, 2010: "Quantifying seasonal influence of stratiform mixed-phase clouds on Arctic sea ice growth rates," International Polar Year Science Conference, Oslo, Norway, June 8–June 12.

36. Feldman, D.R., C.A. Algieri, J. Ong, and W.D. Collins, 2010: "Observational System Simulation Experiments of CLARREO Shortwave Reflectance Spectra." 11th International Meeting on Statistical Climatology, Edinburgh, Scotland, July 12–16, 2010.

37. Kato, S., F.G. Rose, S. Sun-Mack, W.F. Miller, Y. Chen, D.A. Rutan, B.A. Wielicki, D.M. Winker, G. Stephens, P. Minnis, N.G. Loeb, T.P. Charlock, P.W. Stackhouse, K.-M. Xu, and W. Collins, 2010: Computation of surface irradiances using CALIPSO, CloudSat and MODIS derived cloud and aerosol properties. NASA A-train Symposium, October 25–28, 2010, New Orleans, LA.

38. Collins, W.D., 2010: Quantifying Uncertainty in Climate and Integrated Assessments. National Climate Assessment Modeling and Scaling Workshop, Dec. 8, 2010, Washington, DC.

39. Nolan, L., and W. Collins, 2011: The Effects of Cloud-Scale Physics Uncertainty on Climate Prediction. WCRP Conference on Climate Research in Service to Society. 23–28 October 2011, Denver, Colorado.

40. Pressel, K., and W. Collins, 2011: Scaling of the First Order Structure Function of the AIRS Observed Water Vapor Field. WCRP Conference on Climate Research in Service to Society. 23–28 October 2011, Denver, Colorado.

41. Collins, W.D., K.G. Pressel, and A.R. Desai, 2012: A Comparison of the Scale Invariance of the Water Vapor Field Observed by the Atmospheric Infrared Sounder to the Scale Invariance of In Situ Observations from a Very Tall Tower. Poster EM-27, AGU Chapman Conference on Remote Sensing of the Terrestrial Water Cycle, 19–22 February 2012, Kona, Hawaii, USA.

42. Pressel, K.G., and W.D. Collins, 2012: Scale Invariance of the Water Vapor Field Observed by the Atmospheric Infrared Sounder, Poster EM-23, AGU Chapman Conference on Remote Sensing of the Terrestrial Water Cycle, 19–22 February 2012, Kona, Hawaii, USA.

43. Collins, W.D., and D.R. Feldman, 2012: The future evolution of the Earth's reflected shortwave spectrum. Planet Under Pressure Conference, Abstract 3416, May 26–29, 2012, London, UK.

44. Collins, W.D., T.A. O'Brien, and F. Li, 2012: Observational constraints on scale-awareness: Scale-incognizant parameterizations in the Community Atmosphere Model. Frontiers in Computational Physics: Modeling the Earth System, Abstract 178, 16–20 December, Boulder, Colorado.

45. Feldman, D.R., and W.D. Collins, 2013: Pan-Spectral Signatures of Climate Change and Prospects for Observational Constraints, 25th Conference on Climate Variability and Change, Annual American Meteorological Society Meeting, 10 January, Austin, TX.

46. Jones, A.D., K.V. Calvin, W.D. Collins and J. Edmonds, 2013: Towards a more consistent treatment of land-use change within climate assessment. Presented at the Impacts World 2013, International Conference on Climate Change Effects, 27–30 May, Potsdam.

47. Collins, W.D., T.A. OBrien, and F. Li, 2013: Do projections of rainfall extremes converge with increasing model resolution? Abstract 1097, Davos Atmosphere and Cryosphere Assembly DACA-13, 8–12 July, Davos, Switzerland.

48. Collins, W.D., and K.G. Pressel, 2014: Scaling Behavior of Atmospheric Moisture from Cloud System to Synoptic Scales. The Latsis Symposium 2014 on Atmospheric and Climate Dynamics, 18–21 June, Zurich, Switzerland.

49. O'Brien, T.A., W.D. Collins, S.A. Rauscher, and T.D Ringler, 2014: Scale-dependent vertical mass flux and a possible deficiency in current parameterization suites. The Latsis Symposium 2014 on Atmospheric and Climate Dynamics, 18–21 June, Zurich, Switzerland.

6.3 Invited Presentations

6.3.1 Departmental seminars

1. Collins, W.D., 1995: The interaction of convection and the greenhouse effect in the tropical climate. University of North Carolina, Mar. 24, 1995, Rayleigh, North Carolina.

2. Collins, W.D., 1997: A global signature of enhanced shortwave absorption by clouds. University of Colorado, May 2, 1997, Boulder, Colorado.

3. Collins, W.D., 1997: A global signature of enhanced shortwave absorption by clouds. University of Utrecht, Jun. 13, 1997, Utrecht, The Netherlands.

4. Collins, W.D., 1997: A global signature of enhanced shortwave absorption by clouds. Scripps Institution of Oceanography, Sep. 9, 1997, La Jolla, California.

5. Collins, W.D., 1997: A global signature of enhanced shortwave absorption by clouds. State University of New York, Oct. 22, 1997, Stony Brook, New York.

6. Collins, W.D., 1997: A global signature of enhanced shortwave absorption by clouds. Colorado State University, Nov. 20, 1997, Fort Collins, Colorado.

7. Collins, W.D., P.J. Rasch, and B.E. Eaton, 2000: Assimilation of atmospheric aerosol observations. University of Utrecht, Sep. 12, 2000, Utrecht, The Netherlands.

8. Collins, W.D., 2001: Modeling of aerosols with assimilation of satellite and surface aerosol observations. Geophysical Fluid Dynamics Laboratory, Princeton University, Apr. 5, 2001, Princeton, New Jersey.

9. Collins, W.D., 2002: Climate sensitivity to radiative effects of upper tropospheric water vapor. University of California, Los Angeles, May 8, 2002, Los Angeles, California.

10. Collins, W.D., 2002: Modeling aerosols with assimilation of observations. University of California, Los Angeles, May 10, 2002, Los Angeles, California.

11. Collins, W.D., 2002: Modeling aerosols with assimilation of observations. University of Miami, May 15, 2002, Miami, Florida.

12. Collins, W.D., 2002: Climate sensitivity to radiative effects of upper tropospheric water vapor. University of Miami, May 16, 2002, Miami, Florida.

13. Collins, W.D., 2002: Future prospects and challenges for global aerosol modeling. California Institute of Technology, Nov. 13, 2002, Pasadena, California.

14. Collins, W.D., 2002: Future prospects and challenges for global aerosol modeling. Stanford University, Nov. 19, 2002, Palo Alto, California.

15. Collins, W.D., 2003: Atmospheric response to natural and anthropogenic aerosols. Colorado State University, Mar. 27, 2003, Fort Collins, Colorado.

16. Collins W.D., A.J. Conley, and RTMIP coauthors, 2006: The range of climate forcing and response in global change projections: Problems and prospects for the next IPCC assessment. School of Earth and Environment, University of Leeds, Sep. 5, 2006, Leeds, UK.

17. Collins W.D., A.J. Conley, and RTMIP coauthors, 2006: The range of climate forcing and response in projections of global change: Problems and prospects for the next IPCC assessment. Sixth Atmospheric Sciences Symposium, Sep. 29, 2006, University of California, Berkeley, California.

18. Collins W.D., A.J. Conley, and RTMIP coauthors, 2006: Radiative Forcing by Greenhouse Gases and its Representation in Global Models. University of Wisconsin Department of Atmospheric and Oceanic Sciences, Nov. 6, 2006, Madison, Wisconsin.

19. Collins W.D., A.J. Conley, and RTMIP coauthors, 2006: Radiative Forcing by Greenhouse Gases and its Representation in Global Models. Oxford University Department of Physics, Nov. 13, 2006, Oxford, UK.

20. Collins W.D., A.J. Conley, and RTMIP coauthors, 2006: Radiative Forcing in Global Climate Models: Problems and Prospects. Harvard University, Nov. 16, 2006, Harvard, Massachusetts.

21. Collins, W.D., 2007: The roles of solar absorption in climate and climate change, Dept. of Earth and Planetary Science, University of California, Sep. 20, 2007, Berkeley, California.

22. Collins, W.D., 2007: The credibility of climate model predictions for future climate change, Dept. of Environmental Engineering, University of California, Sep. 28, 2007, Berkeley, California.

23. Collins, W.D., 2008: Constructive methods for climate forcing. Dept. of Mathematics, University of California, Feb. 6, 2008, Berkeley, California.

24. Collins, W.D., 2010: "On Climate Modeling." Physics Research Progress Meetings at LBNL, May 18, 2010, LBNL.

25. Collins, W.D., 2010: Computational Frontiers in Climate Change. Nov. 19, 2010, UC Berkeley Wireless Research Center, Berkeley, CA.

26. Feldman, D., W. Collins, C. Algieri, and J. Ong, 2011: Using Observing System Simulation Experiments to Guide the Next Generation of NASA Earth-Observing Satellite Instrumentation, April 19, 2011, College of Oceanic and Atmospheric Sciences, Oregon State University, Corvallis OR.

27. Collins, W.D., 2012. The Need for Scale Invariance in Climate Models. Math Department Seminar Series, 29 February, UC Berkeley, Berkeley, CA.

28. Collins, W.D., A. Thompson, J. Edmonds, T. Janetos, and P.E. Thornton, 2012: The Integrated Earth System Model (iESM): Development and Diagnostic Tests. Energy Modeling Forum, May 3, 2012, Stanford University, Stanford, CA.

29. Feldman, D.R., et al., 2012: Satellite Instrument Simulation for Mission Planning and Climate Model Evaluation, Physics Department Seminar Presentation, 7 November, Imperial College London,

30. O'Brien, T.A., L.C. Sloan, P.Y. Chuang, I.C. Faloona, and W.D. Collins, 2013: The Recent Decline of Coastal Fog and the Drying of the Coastal Boundary Layer. Oregon State University Physics of Oceans and Atmospheres Seminar Series, 29 January, Corvallis, Oregon.

31. Asay-Davis, X.S., M. Maltrud, S.F. Price, W. Lipscomb, D. Martin, S. Cornford, and W. Collins, 2013: Ice sheet-ocean interactions in the Community Earth System Model (CESM). CAOS Colloquium. Courant Institute for Mathematical Sciences, 23 October, New York University, New York, NY.

6.3.2 Colloquia

32. Collins, W.D., 1998: Statistics of Clouds. Conference on Statistics for Understanding the Atmosphere and Ocean, NCAR Geophysical Statistics Project, Jul. 18–24, 1998, Boulder, Colorado.

33. Collins, W.D., 1999: Unresolved issues in atmospheric solar absorption. Robert Cess Symposium, "Frontiers in the Science of Climate Modeling," University of California, San Diego, Oct. 19–21, 1999, San Diego, California.

34. Collins, W.D., 2004: Climate models: Principles and applications. NCAR ASP Summer Colloquium, "Climate and Health," Jul. 21–28, 2004, Boulder, Colorado.

35. Collins. W.D., 2006: An Introduction to CCSM. Art of Climate Modeling Advanced Study Program (ASP) workshop, Jun. 5, 2006, Boulder, Colorado.

36. Collins W.D., 2006: An Introduction to Climate Modeling. Climate Change and Human Health Advanced Study Program (ASP) workshop, Jul. 17, 2006, Boulder, Colorado.

37. Collins, W.D., 2008: "What is a Climate Model? And what can it do?" Summer School on Climate, Mathematical Sciences Research Institute (MSRI), July 25, 2008, Berkeley, California.

38. Collins, W.D., 2009: "The Science of Climate Change." Helios Solar Energy Research Center (SERC) Student Retreat, Aug. 10, 2009, Marconi Conference Center, Marshall, California.

39. Collins, W.D., 2011, Advancing Climate Science for a Sustainable Energy Future. Transatlantic Science Conference, 25–27 October 2011, David Brower Center, Berkeley, CA.

40. O'Brien, T.A., L.C. Sloan, P.Y. Chuang, I.C. Faloona, and W.D. Collins, 2012: Simulating the Recent Decline in Coastal Fog, Climate Change and California's Water Supply conference, 15 May, University of California, Davis.

41. Collins, W.D., 2012, Understanding the interactions between Arctic ecosystems, microbial communities, and climate change: Prospects and Challenges, Peder Sather organizational meeting, October 24, University of California, Berkeley.

42. Collins, W.D., 2013: Water and climate – Projections of the IPCC AR5 Report. 2013. Philomathia Symposium on Water, Climate, and Society: Strategies in a Rapidly Changing World. 1 November, David Brower Center, Berkeley, California.

6.3.3 Corporate or public meetings

43. Collins, W.D., 2005: Future climate change. Scripps Howard Institute on the Environment, May 19, 2005, Boulder, Colorado.

44. Collins, W.D., 2007: Our Changing World: A Scientific Assessment, St. Andrews Academy, March 29, 2007, Jackson, Mississippi.

45. Collins, W.D., 2007: Global warming: A scientific assessment of our changing world, ex-Ls luncheon, Aug. 16, 2007, Berkeley, California.

46. Collins, W.D., 2007: An overview of climate models: Applications to climate change, Chevron Fellows METamorphosis Conference, Oct. 17, 2007, League City, Texas.

47. Collins, W.D., 2007: Reducing our carbon footprint: Frontiers in climate forecasting, Berkeley Lab series Science at the Theater, Oct. 22, 2007, Berkeley Repertory Theatre, Berkeley, California.

48. Collins, W.D., 2008: Climate change: Past, present, and future, East Bay Municipal Utility District Headquarters, Feb. 27, 2007, Oakland, California.

49. Collins, W.D., 2008: Climate change: Past, present, and future, Association of California Water Agencies (ACWA) Region 5 Program Financial Impacts of Climate Change Apr. 7, 2008, San Francisco, California.

50. Collins, W.D., 2008: Reducing our carbon footprint: Frontiers in climate forecasting, St. Stephens Episcopal Church, Apr. 8, 2008, Orinda, California.

51. Collins, W.D., 2010: Advancing Climate Science for a Sustainable Energy Future. Berkeley International Symposium on Energy and Climate Science (Philomathia), Oct. 1, 2010, Berkeley Repertory Theater, Berkeley, CA.

52. Collins, W.D., 2011: The Dawn of the Anthropocene: A Grand Challenge for Science, Society, and Education. California Institute for Biodiversity, 24 September, Oakland, CA.

53. Collins, W.D., 2014: Water and Climate – Projections of the IPCC AR5 Report. Operation Sierra Storm TV-Meteorologist Conference, 8–11 January, South Lake Tahoe, CA.

6.3.4 Governmental organizations

54. Collins, W.D., 2000: Near-infrared/visible albedo ratio: Implications for climate. National Academy of Sciences Triana Review, Jan. 10, 2000, Washington, DC.

55. Collins, W.D., 2001: Aerosols, clouds, and the global environment: New techniques for modeling. National Science Foundation, May 11, 2001, Ballston, Maryland.

56. Collins, W.D., 2005: Simulations of global climate change commitment for the IPCC AR4. United Nations Framework Convention on Climate Change (UNFCCC) 22nd session of the subsidiary bodies, May 26, 2005, Bonn, Germany.

57. Collins, W.D., 2005: The Community Climate System Model. NRC Panel on Climate Variability and Change, Oct. 24–26, 2005, Washington, DC.

58. Collins, W.D., 2007: The Future Radiative Forcing of the Earth's Climate System. DOE Scientific Discovery through Advanced Computing (SciDAC), Jun. 24–28, 2007, Boston, Massachusetts.

59. Collins, W.D., 2007: The future of California's climate from a global perspective, Fourth CEC California Climate Change Conference, Sep. 11, 2007, Sacramento, California.

60. Collins, W.D., 2008: Radiation and clouds: Major challenges in forcings and feedbacks, Identifying Outstanding Grand Challenges in Climate Change Research: Guiding DOE's Strategic Planning, Mar. 25–27, 2008, Arlington, Virginia.

61. Collins, W.D., 2008: Extreme climate change: Scaling laws and scale invariance, ASCR workshop on Mathematics for Analysis of Petascale Data (MAPD), Jun. 3–5, 2008, Rockville, Maryland.

62. Collins, W.D, 2008: "Current state of climate change modeling," National Security and Climate Change Workshop, U.S. Climate Change Science Program Office, November 18, 2008, Washington, DC.

63. Collins, W.D., 2009: "Transformation of Climate Change Science: Challenges and Prospects." DOE Climate Change Science Focus Group, July 27–28, 2009, Washington DC.

64. Collins, W.D., 2010: "Climate Change." Visit of Environment Industry Study Group, Industrial College of the Armed Forces, National Defense University. April 7, 2010, LBNL.

65. Collins, W.D., 2010: "Abrupt climate change from methane hydrate destabilization." Distinguished lecture series, NSF, May 10, 2010, Arlington, VA.

66. Collins,W.D., 2012: Action on Climate, Environment, and Society (ACES). Bay Area Joint Policy Committee workshop "Preparing the Bay Area for a Changing Climate," 7 June, MTC/ABAG Metro Center, Oakland, CA.

67. Collins, W.D., 2014: Communicating Climate Science. DOE Office of Biological and Environmental Research (BER) Earth System Modeling (EaSM) Science Team Meeting, 27–29 January, USDA Conference and Training Center, Washington DC.

68. Collins, W.D., 2014: Projecting our Climates Future. DOE Office of Biological and Environmental Research (BER) Brownbag Seminar Series, 29 January, Germantown, MD.

6.3.5 National/international research labs and centers

69. Collins, W.D., and V. Ramanathan, 1991: Thermodynamic regulation of ocean warming by cirrus clouds during the 1987 El Niño. NASA Langley Research Center, Apr. 26, 1991, Hampton, Virginia.

70. Collins, W.D., 1991: Analysis of satellite data for global climate studies. Los Alamos National Laboratory, Dec. 3, 1991, Los Alamos, New Mexico.

71. Collins, W.D., 1998: A global signature of enhanced shortwave absorption by clouds. Seventeenth CERES Science Team Meeting, NASA Langley Research Center, Apr. 21–23, 1998, Hampton, Virginia.

72. Collins, W.D., 1999: Effects of enhanced shortwave absorption on simulations of the tropical Pacific climate system. NASA Goddard Space Flight Center, May 25, 1999, Greenbelt, Maryland.

73. Collins, W.D., 2001: Aerosol assimilation in a GCM. Twenty-third CERES Science Team Meeting, NASA Langley Research Center, Jan. 23–25, 2001, Hampton, Virginia.

74. Collins, W.D., 2001: Modeling aerosols with assimilation of observations. NASA Goddard Space Flight Center, Nov. 28, 2001, Greenbelt, Maryland.

75. Collins, W.D., 2002: Water vapor, clouds, and the Earth radiant energy balance. Goddard Space Flight Center Graduate Student Summer Program, June 11, 2002, Greenbelt, Maryland.

76. Collins, W.D., 2004: The Community Climate System Model. U.S. GLOBEC SSC Meeting, Nov. 4–5, 2004, Boulder, Colorado.

77. Collins, W.D., 2006: Challenges and Prospects for Earth System Modeling. Lawrence Berkeley National Laboratory, Oct. 12, 2006, Berkeley, California.

78. Collins, W.D., 2007: Where do we go from here? Mathematical Science Research Institute Symposium on Climate Change: From Global Models to Local Action, Apr. 12–13, 2007, Berkeley, California.

79. Collins W.D., 2007: The computational frontiers of Earth system modeling. Town hall meeting, Department of Energy's Simulation and Modeling at the Exascale for Energy, Ecological Sustainability, and Global Security (E3SGS), Apr. 17–18, 2007, Berkeley, California.

80. Collins, W.D., 2007: The Future of the Earth's Climate: Frontiers in Forecasting. Lawrence Berkeley Laboratory Summer Lecture Series, July 11, 2007, Berkeley, California.

81. Collins, W.D., 2008: Earth system simulation for climate change: Challenges and prospects, NASA Ames Research Center GREEN Seminar, Apr. 17, 2007, Moffett Field, California.

82. Collins, W.D., A. Conley, D. Fillmore, and P. Rasch, 2009: "The role of solar absorption in climate and climate change," Pacific Northwest National Laboratory, June 8, 2009, Richland, Washington.

83. Collins, W.D., 2009: "Radiative Processes." Community Atmosphere Tutorial, July 29, 2009, NCAR, Boulder, Colorado.

84. Collins, W.D., D. Rosa, and Wei-Chun Hsieh, 2011: Chemical Transport in the Multi-scale Modeling Framework: Tests and Implications for Climate. Center for Multiscale Modeling of Atmospheric Processes Meeting, Jan. 11–13, 2011, UC Berkeley, Berkeley, CA.

85. Collins, W.D, D. Feldman, C. Algieri, J. Ong, Y. Roberts, and P. Pilewskie, 2011: The future evolution of the Earth's reflected shortwave spectrum. May 4, 2011, Jet Propulsion Laboratory, Pasadena, CA.

86. Collins, W.D, 2011: Adding Integrated Assessments to the Community Earth System Model: Progress and prospects. Societal Dimensions of Earth System Modeling, May 25, 2011, NCAR, Boulder, CO.

87. Collins, W.D., 2011: A future with(out) climate mitigation. EPA-LBNL workshop on CO2 Geological sequestration and water resources, June 1, Berkeley, CA.

88. Collins, W.D, etc. 2011: Quantifying Uncertainty in Climate and Integrated Assessments. CESM annual meeting, June 21–23, Breckenridge, Colorado.

89. Collins, W.D., 2011: Aerosol Particles: The Big Picture. International Cooperative in Aerosol Prediction Workshop on Aerosol Emission and Removal Processes and Satellite Data for Aerosol Prediction. ESA/ESRIN, Frascati, 14–17 May.

90. Collins, W.D., 2012: Cross-cutting Uncertainty Quantification Research towards Climate Science for a Sustainable Energy Future. First Annual CESM Uncertainty Quantification and Analysis Interest Group Meeting, 30–31 January 2012, National Center for Atmospheric Research, Boulder, CO.

91. Cameron-Smith, P.C.S., and W.D. Collins, 2012: Update on plans for global CESM methane simulations. Land Model Working Group meeting, 29 February 2012, National Center for Atmospheric Research, Boulder, CO.

92. Collins, W.D., 2012: Multiscale methods for enabling scale-aware capability in CESM. 17th Annual CESM Workshop, 18–12 June 2012, Breckenridge, CO.

93. Collins, W.D., 2012: Earth System Models and Uncertainty, IMAGe Topic of the Year (TOY) – Uncertainty in Climate Change Research: An Integrated Approach, August 13, NCAR, Boulder, Colorado.

94. O'Brien, T.A., L.C. Sloan, P.Y. Chuang, I.C. Faloona, and W.D. Collins, 2013: The Recent Decline of Coastal Fog and the Drying of the Coastal Boundary Layer. Pacific Northwest National Laboratory Climate Physics Seminar, 31 January, Richland, Washington.

95. O'Brien, T.A. W.D. Collins, F. Li, S.A. Rauscher, T.D. Ringler, M. Taylor, S.M. Hagos, and L.R. Leung, 2013: Observed Scaling in Clouds and Precipitation and Scale Incognizance in Regional to Global Atmospheric Models. Pacific Northwest National Laboratory Climate Physics Seminar, 1 February, Richland, Washington.

96. Feldman, D.R., et al., 2013: Developing Observational Constraints for Climate Models Using Hyperspectral Observing System Simulation Experiments, Lawrence Livermore National Laboratory Atmospheric Earth and Energy Division Atmospheric Seminar Series, Livermore, Calif., 26 February.

97. Feldman, D.R., et al., 2013: Using Hyperspectral Observing System Simulation Experiments to Identify Observational Constraints for Climate Models, Climate and Radiation Laboratory Seminar Series, NASA Goddard Space Flight Center, Greenbelt, MD, 19 April.

98. Collins, W.D., D.R. Feldman, C. Algieri, J. Ong, Y. Roberts, and P. Pilewskie, 2013: Early detection of critical climate feedbacks from hyperspectral observations, May 16, NASA GSFC, Greenbelt, MD.

99. Asay-Davis, X.S., M. Maltrud, S.F. Price, W. Lipscomb, D. Martin, S. Cornford, W. Collins 2013: Ice sheet-ocean interactions in the Community Earth System Model (CESM). British Antarctic Survey, 25 September, Cambridge, UK.

100. Prabhat, S. Byna, M.F. Wehner, E.W. Bethel, and W.D. Collins, 2013: Pattern Detection for Large Climate Datasets. RIST/JAMSTEC Conference, LBNL, Berkeley, CA.

101. Collins, W.D., 2014: Modeling the Changing Earth System: Prospects and Challenges. National Energy Research Supercomputing Center (NERSC) 2014 User Group, 40th Anniversary Workshop, 3–6 February, Berkeley, CA.

102. Collins, W.D., and D.R Feldman, 2014: Trends in Climate Modeling. NASA Langley Research Center, 27–28 May, Hampton, VA.

6.3.6 National/international society conferences

103. Collins, W.D., and P.J. Rasch, 2000: Assimilation of atmospheric aerosol observations. 2000 Spring Meeting, American Geophysical Union. *Eos. Trans. AGU*, **81** (no. 19), p. S98.

104. Collins, W.D., 2000: Sources of uncertainty in climate-change simulations from coupled climate models. 2000 Fall Meeting, American Geophysical Union. *Eos. Trans. AGU*, **81** (no. 48), p. F21.

105. Collins, W.D., 2003: Radiative balance of the Earth's atmosphere. AAAS Annual Meeting, Feb. 13–18, 2003, Denver, Colorado.

106. Collins, W.D, 2003: Effects of aerosols on regional and global climate. EGS-AGU-EUG General Assembly. *EGS Newsletter*, p. 526.

107. Collins W.D., A.J. Conley, D.W. Fillmore, and P.J. Rasch, 2004: Regional and global response of the climate to aerosol radiative forcing. International Radiation Symposium 2004, "Current Problems in Atmospheric Radiation," Aug. 23–28, 2004, Busan, South Korea.

108. Collins, W.D., W.M. Washington, and G.A. Meehl, 2004: Effects of aerosols on the climate and ecosystem of northern Eurasia: Results from global models. 2004 Fall Meeting, American Geophysical Union, *Eos Trans. AGU*, 85(47), Fall Meet. Suppl., abstract A24C-06.

109. Collins, W.D. V. Ramaswamy, Q. Fu, M.D. Schwarzkopf, and D.W. Fillmore, 2005: Radiative forcing by well-mixed greenhouse gases: Estimates from GCMs in the IPCC AR4. *Sixteenth Conference on Climate Variability and Change*, 85th Annual AMS Meeting, Jan. 10–13, 2005, San Diego, California (American Meteorological Society, Boston), abstract 6.4.

110. Collins, W.D., 2005: Prospects for an Earth system model to study global climate change. American Physical Society March Meeting, Mar. 21–25, 2005, Los Angeles, California.

111. Collins, W.D., 2005: Radiative Forcing by Well-Mixed Greenhouse Gases: Comparison of IPCC Models. International Association of Meteorology and Atmospheric Sciences (IAMAS) 2005 Conference, Aug. 8, 2005, Beijing, China.

112. Collins, W.D. and D.W. Fillmore, 2005: An aerosol analysis using NASA Aqua and Terra satellite observations. American Association for Aerosol Research (AAAR) 2005 annual conference, Oct. 17–21, 2005, Austin, Texas.

113. Collins, W.D., 2007: The role of climate benchmark records in climate-change attribution and projection, 2007 Fall Meeting, American Geophysical Union, *Eos Trans. AGU*, 88(52), Fall Meet. Suppl., abstract A54D-02.

114. Collins, W.D., 2007: The role of climate benchmark records in climate-change attribution and projection, 2007 Fall Meeting, American Geophysical Union, Eos Trans. AGU, 88(52), Fall Meet. Suppl., abstract A54D-02.

115. Collins, W.D., 2008: Scaling laws, scale invariance, and climate prediction, talk 1035-60-1976, SIAM Minisymposium, Joint Mathematics Meeting, Jan. 7, 2008, San Diego, California.

116. Collins, W.D., 2008: Computational Challenges for Dynamic Earth System Models, Symposium 180-071: Transforming Our Ability To Predict Climate Change and Its Effects, American Association for the Advancement of Science Annual Meeting, Feb. 16, 2008, Boston, Massachusetts.

117. Collins, W.D., V. Ramaswamy, A. Conley, and M. Iacono, 2008: "The significance of shortwave methane forcing for climate change," Session GC13, "Regional-Scale Forcing of Climate," Eos Trans. AGU, 89(53), Fall Meet. Suppl., Abstract GC23A-0740.

118. Mlynczak, M.G., D.F. Young, B.A. Wielicki, Y. Huang, S.S. Leroy, D. Feldman, and W. Collins, 2010: Evaluating Climate Models with CLARREO. Abstract A12B-01, 2010 Fall AGU Meeting, San Francisco, CA.

119. Collins, W., 2011: Uncertainty across the CMIP5 ensemble of climate projections: Connecting cause and effect, Abstract GC13D-01, presented at 2011 Fall Meeting, AGU, San Francisco, CA, 5–9 Dec.

120. Thornton, P.E., J. Mao, X. Shi, J. Edmonds, W. Collins, G.C. Hurtt, L.P. Chini, A.M. Thomson, and A.C. Janetos, 2011: Influence of prognostic land use on 21st century climate prediction, Abstract GC22C-02, presented at 2011 Fall Meeting, AGU, San Francisco, CA, 5–9 Dec.

121. Collins, W., M. Anitescu, D.C. Bader, B. Debusschere, J. Gattiker, P. Hovland, G. Johannesson, G. Lin, D. Lucas, H. Najm, Y. Qian, and L. Swiler, 2012: The Role of Uncertainty Quantification in Climate Science for a Sustainable Energy Future, Abstract GC32A-01, presented at 2012 Fall Meeting, AGU, San Francisco, CA.

122. Collins, W., J.A. Edmonds, P.E. Thornton, A. Craig, G.C. Hurtt, A.C. Janetos, A. Jones, C.D. Koven, W.J. Riley, and J. Truesdale, 2012: Prospects for projecting the impact of Earth system processes on Integrated Assessment, Abstract A54A-08, presented at 2012 Fall Meeting, AGU, San Francisco, CA.

123. Prabhat, M., M.F. Wehner, S. Byna, O. Ruebel, F. Li, W. Bethel, and W. Collins, 2012: 13TB, 80,000 cores and TECA: The search for extreme events in climate datasets, Abstract IN52A-02, presented at 2012 Fall Meeting, AGU, San Francisco, CA.

124. Thomson, A.M. J.A. Edmonds, W. Collins, P.E. Thornton, G.C. Hurtt, A.C. Janetos, A. Jones, J. Mao, L.P. Chini, K.V. Calvin, B.P. Bond Lamberty, and X. Shi, 2012: Advancing coupled human-Earth system models: The integrated Earth System Model Project, Abstract GC11D-1033, presented at 2012 Fall Meeting, AGU, San Francisco, CA.

125. Collins, W.D., 2012: Computing and climate: The Road Ahead. DOE Computing Townhall, Session TH38, AGU Fall 2012 Meeting, San Francisco, CA.

126. Collins, W.D., 2013: The integrated Earth System Model: A Next Generation Tool for Exploring Energy-Climate Interactions. DOE IA Townhall, 93rd AMS Annual Meeting, 6–10 January, Austin, Texas.

127. Collins, W.D., 2013: Multi-scale Behaviors of the Water Cycle, DOE Water Workshop Townhall, 93rd AMS Annual Meeting, 6–10 January, Austin, Texas.

128. Collins, W.D., 2013: Climate modeling from first principles: Feasibility and prospects. APS March Meeting, Abstract N4.00005, 20 March, Baltimore, Maryland.

129. Benedict, J.J., W. Collins, and H. Johansen, 2013: Organized Tropical Convection in a High-Order Finite-Volume GCM Dynamical Framework with Adaptive Mesh Refinement, Abstract A33B-0217 presented at 2013 Fall Meeting, AGU, San Francisco, CA, 9–13 December.

130. Collins, W., H. Johansen, P. McCorquodale, P. Colella, and P.A. Ullrich, 2013: Nonhydrostatic adaptive mesh dynamics for multiscale climate models, Abstract A31H-03 presented at 2013 Fall Meeting, AGU, San Francisco, CA, 9–13 December.

131. Collins, W., K. Chowdhary, B. Debusschere, and D. Lucas, 2013: The Central Role of Uncertainty Quantification in Multiscale Earth System Models, Abstract GC34C-02 presented at 2013 Fall Meeting, AGU, San Francisco, CA, 9–13 December.

6.3.7 National/international workshops

132. Collins, W.D., 1993: Satellite data for diagnostics and for validation of model simulations. *Proceedings of the EUCREX/NOCLIMP Workshop, 24–26 May, 1993* (Department of Meteorology Report, Stockholm University), pp. 19–28.

133. Collins, W.D., 1998: Effects of enhanced shortwave absorption on simulations of the tropical Pacific ocean/atmosphere system. GCSS-WGNE *Workshop on Cloud Processes and Cloud Feedbacks in Large-Scale Models* (World Climate Research Program, Geneva), WCRP-110, WMO/TD-No. 993, Nov. 9–13, 1998, ECMWF, Reading, England.

134. Collins, W.D., 2003: Aerosols: What are the links with climate and how well are we modeling them? NCAR Chemistry-Climate Interactions Workshop, Feb. 10–12, 2003, Sante Fe, New Mexico.

135. Collins, W.D., 2003: Understanding the role of aerosols in climate through synthesis of models and observations. Gordon Conference on Solar Radiation and Climate, Colby-Sawyer College, Jul. 13–18, 2003, New London, Connecticut.

136. Collins, W.D., 2003: The Community Climate System Model. Keynote address, Computing in the Atmospheric Sciences Workshop 2003 (CAS2K3), Sep. 8, 2003, Annecy, France.

137. Collins, W.D., V. Ramaswamy, Q. Fu, M.D. Schwarzkopf, Y. Sun, R. Portmann, and D.W. Fillmore, 2005: Radiative forcing by well-mixed greenhouse gases: Estimates from GCMs in the IPCC AR4. Atmospheric Radiation Measurement Meeting, Mar. 15–16, 2005, Daytona Beach, Florida.

138. Collins, W.D., 2005: Issues of upscaling and downscaling research – A GCM perspective. WRF-RCM Workshop, Mar. 22–23, 2005, Boulder, Colorado.

139. Collins, W.D., 2005: Status of CCSM. Computing in the Atmospheric Sciences Workshop 2005 (CAS2K5), Sep. 11–14, 2005, Annecy, France.

140. Bader, D.C., J. Hack, D. Randall, and W. Collins, 2005: Climate simulation for climate change studies. Workshop on Frontiers of Extreme Computing, Oct. 17, 2005, Santa Cruz, California.

141. Collins, W.D., 2006: Regional effects of aerosol emissions. Conference on Climate Change and Urban Areas. Apr. 3–4, 2006, University College London, London, United Kingdom.

142. Collins, W., and J. Wolfe, 2006: The Community Climate System Model CCSM3. Geoscience Application Requirements for Petascale Architectures (GARPA) workshop, Jun. 1–2, 2006, Arlington, Virginia.

143. Collins, W.D., 2006: Modeling the Changing Earth System: Prospects and Challenges. IBM System Scientific Computing User Group meeting SCICOMP-12, Jul. 17, 2006, Boulder, Colorado.

144. Collins W.D., A.J. Conley, and RTMIP coauthors, 2006: Radiative Forcing by Greenhouse Gases and its Representation in Global Models. 2006 Solar Radiation and Climate Experiment (SORCE) Science Meeting, Sep. 20–22, 2006, Eastsound, Washington.

145. Collins, W.D., 2007: Radiation errors in climate models. 3rd WGNE Workshop on Systematic Errors in Climate and NWP Models, Feb. 12–16, 2007, San Francisco, California.

146. Collins, W.D., 2007: CLARREO: A climate model prediction perspective, University of Maryland, Jul. 16, 2007, College Park, Maryland.

147. Collins, W.D., 2008: Collaboration in climate research: The age of assessments, Berkeley Conference on Climate Research Management, Apr. 24, 2008, Berkeley, California

148. Collins, W.D., 2008: "What is a climate model? And what can it do?" Amphibia Tree (ATree) Species Distribution Modeling Workshop, University of California, Berkeley, December 5, 2008, Berkeley, California.

149. Collins, W.D., 2008: Computational challenges for dynamic Earth system models, The International Supercomputing Conference, Jun. 18, 2008, Dresden, Germany.

150. Collins, W.D., 2008: "Abrupt and Extreme Climate Change: Implications for Water," XVII International Conference on Computational Methods in Water Resources (CMWR 2008), July 6–10, 2008, San Francisco, California.

151. Collins, W.D, V. Ramaswamy, A. Conley, and M. Iacono, 2009: "The significance of shortwave methane forcing for climate change," Joint IPCC-WCRP-IGBP Workshop: New Science Directions and Activities Relevant to the IPCC AR5, March 4, 2009, University of Hawaii, Honolulu, Hawaii.

152. Collins, W.D., and D. Bader, 2009: "Exascale applications in climate science," 2009 U.S. / Japan Climate Change and Sustainability Workshop, March 17, 2009, Oak Ridge, Tennessee.

153. Collins, W.D., 2010: "Abrupt Climate Change from Methane Hydrate Destabilization," Current Challenges in Computing 2010: Climate Modeling, Aug. 31, 2010, The Meritage Resort and Spa, Napa California.

154. Feldman, D., W. Collins, C. Algieri, J. Ong, Y. Roberts, and P. Pilewskie, 2011: MODTRAN 5.3 Simulations of Changes in Shortwave and Longwave Spectra from Climate Change in the 21st Century, June 14, 2011, 33rd Review of Atmospheric Transmission Models Meeting, National Heritage Museum, Lexington, MA.

155. Collins, W., J. Edmonds, A. Janetos, A. Jones, A. Thompson, and P. Thornton, 2012: Land use, water, and carbon in the integrated Earth System Model (iESM). Energy Modeling Forum, 23 July, Snow Mass, Colorado.

156. Collins, W., 2012: Aerosol Particles: The Big Picture. Energy Modeling Forum, 23 July, Snow Mass, Colorado.

157. Collins, W.D., 2012: Opportunities for Simulating Cloud-Aerosol-Radiation Interactions in the Era of Cloud-system-scale Modeling, Global Atmospheric System Studies (GASS) Meeting, 13 September, NCAR, Boulder, Colorado.

158. O'Brien, T.A., W.D. Collins, L.C. Sloan, P.Y. Chuang, and I.C. Faloona, 2012: Sea Surface Temperatures Drive Fog Variability but not the Long-term Trend. 59th Annual Eastern Pacific Ocean Conference – EPOC 2012, 19–22 September, Timberline Lodge, Mt. Hood, Oregon.

159. Gauss, M., W.D. Collins, and V. Aurora, 2012: The current state of methane modeling, AMAP Meeting September 28, Washington DC.

160. Collins, W.D., 2012: Linking IAMs to Earth System Models: Lessons from Historical Aerosols in CMIP5, Integrated Assessment Modeling Consortium (IAMC) meeting, November, Utrecht, the Netherlands.

161. Collins, W.D., 2013: "Long-Term (Decadal and Beyond) Climate Simulation and Projection," CIMMS 2nd US-China Symposium on Meteorology, Qingdao, 25–27 June.

162. Collins, W.D., J. Edmonds, G. Hurtt, and the iESM Team, 2013: Interactions of IAMs, ESMs, and EMICs. Aspen Global Change Institute, 8–13 August, Aspen, CO.

163. Asay-Davis, X.S., M. Maltrud, S.F. Price, W. Lipscomb, D. Martin, S. Cornford, and W. Collins, 2013: Ice sheet-ocean interactions in the Community Earth System Model (CESM). In Ice sheet-Climate Coupling Workshop, Reading, UK, October 1, 2013.

164. Collins, W.D, J. Edmonds, P.E. Thornton, A. Thompson, and the iESM Team, 2013: The integrated Earth System Model (iESM). Fourth Annual Global Change Assessment Model (GCAM) Community Modeling Meeting, 2–4 October, College Park, MD.

165. Collins, W., P. Caldwell, B. Debusschere, S. Ghan, D. Lucas, L. Oliker, T. Ringler, and C. Woodward, 2013: Multiscale methods for enabling scale-aware capability in Earth System Models. Institute for High-Performance Computational Science with Structured Meshes and Particles (HPCS-SMP) Workshop, 14–16 October, University of Berkeley, Berkeley, CA.

166. Collins, W.D., 2014: Aerosol and radiation: CMIP6 model evaluation needs. Observations for Climate Model Intercomparisons (OBS4MIPs) workshop, 29 April to 1 May, NASA Headquarters, Washington DC.

AWARDS:

7 Academic Recognition

- Contributor (lead author) for the Fourth Assessment Report by the Intergovernmental Panel on Climate Change, co-recipient of the 2007 Nobel Peace Prize.
- Aug. 2012: NASA Group Achievement Award to the CLARREO Mission Concept Team.

PROFESSIONAL ACTIVITIES, TEACHING, AND SERVICE:

8 Service Activities (last 10 years)

8.1 National and international assessment activities

- Lead and collaborating author, IPCC Working Group I Fourth Assessment Report, 2004–2007.
- Expert reviewer, IPCC Working Group I Fourth Assessment Report, 2005–2006.
- Lead author, IPCC Working Group I Fifth Assessment Report, 2010–2013.

8.2 Institutional advisory/committee activities

- Chair, NCAR CCSM Scientific Steering Committee, 2003 – 2005.
- Member, NCAR's Computational and Information Systems Laboratory Advisory Panel, 2005 – 2011.
- Member, CCSM Scientific Steering Committee, 2006 – 2013.
- Member, Search committee for NCAR Atmospheric Chemistry Division Director, 2006 – 2007.
- Member, Selection committee, NCAR Advanced Study Program Early Career Scientists, 2006 – 2007.
- Alternate Chancellor's faculty seat, Chancellor's Advisory Committee on Sustainability, 2008 – 2009.
- Member, NCAR Earth Observing Laboratory (EOL) Advisory Panel, 2009 – 2010.
- Member, Steering Committee, LBNL Carbon Cycle 2.0 Initiative, 2009 – 2013.
- Affiliated member, UC Berkeley Energy and Resources Group, 2009 – present.
- Member, LBNL Earth Sciences Division Council, LBNL, 2007 – present.
- Chair, UCB/LBNL search for joint climate faculty/scientist, 2010 – 2011.
- Member, LBNL search for Computational Research Division director, 2010 – 2011.
- Member, UCB VCR's search committee for BIE director, 2011 – 2012.
- Member, LBNL Earth Science Division Staff Committee, 2011 – present.

- LBNL Chair, UCD / LBNL faculty search committee, 2012 – present.
- Member, LBNL Earth Science Division Director Search Committee, 2012 – 2013.
- Member, Advisory Board, Peder Sather Center (UCB), 2012 – present.
- Member, Berkeley Global Change Biology (BiGCB) steering committee, 2012 – present.
- Briefing to UC Regents on UC DOE Lab Climate Research, Sacramento, May 15, 2013.
- Briefing to UC President Napolitano re LBNL climate research on 15 October 2013.

8.3 External advisory/committee activities

- Contributing author, NASA Conference on Uncrewed Aerospace Vehicles, 1996.
- Panelist, NSF Globe Proposal Review Panel, 1998.
- Member, AMS Committee on Atmospheric Radiation, 1999 – 2006.
- Chair, AMS Committee on Atmospheric Radiation, 2002 – 2006.
- Panelist, United Nations Environmental Program panel on the Asian Brown Cloud, 2001.
- Panelist, NASA ESSP-3 Lidar Algorithms Peer Review, 2001.
- Chair, NASA Radiation and Climate Peer Review, 2002.
- Panelist, National Academy Climate Sensitivity Workshop, 2003.
- Invited participant, Joint WGCM CFMIP/IPCC expert meeting on Climate Sensitivity and Feedbacks, 2004.
- Member, NASA Earth-Sun System Subcommittee, 2005.
- Member, Joint ASCAC-BERAC subcommittee, Computational and Informational Technology Rate Limiters to Climate Change Science, 2007.
- Panelist, Review of NOAA's Climate Research and Modeling Program for NOAA Climate Working Group of the NOAA Scientific Advisory Board, 2008.
- Member at Large, AAAS Atmospheric Sciences Section, 2009 – 2010.
- Reviewer, U.S. Climate Change Science Program, 2009.
- Chair, NASA Goddard Global Modeling and Assimilation Office Review, 2009.
- Member, LANL Energy Security External Advisory Board, 2009 – 2011.
- Member, UK Met Office / Hadley Centre Science Review Group, 2009 – 2012.
- Member, PNNL Fundamental and Computational Sciences Board, 2009 – 2011.
- Invited participant, BERAC 20-year Climate Vision Workshop, 2010.
- Invited participant, BER Climate Research Roadmap Workshop, 2010.
- Panelist and reviewer, DOE Regional Modeling Climate Panel review, 2010.
- Steering Group, National Climate Assessment Modeling and Scaling Workshop, 2010.
- Member, ASCR Panel, ORNL Leadership Computing Facility (OLCF-3) Titan Application Readiness Review, 2010.

- Chair, DOE ASCR INCITE allocation panel for climate applications, 2010.
- Participant, NRC Workshop on Climate Modeling, 2011.
- Launch and co-chairmanship of Societal Dimensions Working Group, CESM Project.
- Advisory Board of the Center for Climate Sciences at JPL, 2012 – present.
- Invited participant and panelist, DOE Financial services workshop, AAAS, Washington DC, June 3–4, 2013.
- Member, Committee of Visitors for DOE's Climate and Environmental Sciences Division, July 8–10, 2013.
- Invited member, Aspen Global Change Institute workshop on CMIP6 and IPCC AR6, 4–9 August 2013.
- Invited participant, Arctic Monitoring and Assessment Program, 2013 – 2014.
- Invited speaker and participant, APS special meeting on the APS statement on climate change, New York University, New York, New York, 8 January 2014.
- LBNL lead for development of DOE Big Idea's whitepaper on climate, and participant in the DOE Big Ideas Summit, 30–31 January 2014, Crystal City, VA.
- Invited participant, breakout lead, and whitepaper author for DOE's Water-Energy Tech Team (WETT) workshop, 5–6 May 2014, Washington, DC.

8.4 Editorial service

- Editor, Journal of Climate, 2007 – 2008.

8.5 Professional meeting organizer

- Organizer, ASP Summer Colloquium, "Interactions between Aerosols, Climate, and the Hydrological Cycle," Jul 2002, Boulder, Colorado.
- Co-chair, Aspen Global Change Institute, "Aerosols and the Hydrological Cycle," Jul. 2004, Aspen, Colorado.
- Vice-chair, Gordon Research Conference on Solar Radiation and Climate, Jul. 2005, Waterville, Maine.
- Co-chair, Joint AMS Clouds and Radiation meeting, Jul. 2006, Madison, Wisconsin.
- Chair, Gordon Research Conference on Solar Radiation and Climate, Jul. 2007, New London, New Hampshire.
- Appointment, vice-chair for DOE's Workshop on Community Modeling and Long-Term Predictions of the Integrated Water Cycle, Sep. 24–26, 2012.

8.6 Professional meeting session chair

- Session chair, Chapman Conference on "Atmospheric Absorption of Solar Radiation," Aug. 13–17, 2001, Estes Park, Colorado.
- Session chair, 11th AMS Conference on Atmospheric Radiation, Jun. 2–7, 2002, Ogden, Utah.
- Member, Organizing Committee, IPCC Working Group I Workshop on Climate Sensitivity, Jul. 2004, Paris, France.
- Session chair, International Radiation Symposium 2004, Aug. 23–28, 2004, Busan, South Korea.
- Poster session chair, Fourth Gordon Conference on Radiation and Climate, Jul. 24–29, 2005, Waterville, Maine.
- Session chair, Annual American Association for Aerosol Research (AAAR) Conference, Oct. 17–21, 2005, Austin, Texas.
- Co-convener, AGU Fall meeting Union session, Dec. 5–9, 2005, San Francisco, California.
- Session chair, 12th AMS Conference on Atmospheric Radiation, Jul. 9–14, 2006, Madison, Wisconsin.
- Session chair, NASA SOlar Radiation and Climate Experiment (SORCE) Meeting, Sep. 20–22, 2006, Eastsound, Washington.
- Co-convener and session chair, AGU Fall meeting session GC19, SI-Traceable Climate Measurements From Space, Dec. 15–19, 2008, San Francisco, California.
- Session Co-convener, AGU sessions GC12A and GC13A, Coastal and Near-Term Climates in a Changing World, 2010 Fall AGU Meeting, San Francisco, CA. December 13–17, 2010.
- Session chair, 23rd Conference on Climate Variability and Change, 91st American Meteorological Society Annual Meeting, Seattle, WA. January 27, 2011.
- Session chair, Gordon Research Conference on Radiation and Climate, July 2011, Colby Sawyer College.

8.7 Courses taught

- University of California, San Diego (Scripps Institution of Oceanography), "Introduction to Atmospheric Radiation," Spring 1994.
- University of Colorado (Program in Atmospheric and Oceanic Sciences), ATOC 4710/5710, "Introduction to Atmospheric Physics," Spring 2002.
- University of California, Berkeley (Earth and Planetary and Geography), EPS C181 / GEOG C139, "Atmospheric Physics and Dynamics," CCN 19123, Fall 2008.
- University of California, Berkeley (Earth and Planetary and Geography), EPS C181 / GEOG C139, "Atmospheric Physics and Dynamics," CCN 19072, Fall 2010.

- University of California, Berkeley (Earth and Planetary and Geography), EPS 230, "Radiation and its Interactions with Climate," CCN 19251, Fall 2013.

8.8 Ph.D. committees

- Lansing Madry (Program in Atmospheric and Oceanic Sciences, University of Colorado, Boulder), Sea salt aerosols in global models, 2002 – 2007 [thesis committee].
- Nicole Schlegel (Department of Geography, University of California, Berkeley), 2007 – 2011. Thesis: "Determining Greenland Ice Sheet sensitivity to regional climate change: One-way coupling of a 3-D thermo-mechanical ice sheet model with a mesoscale climate model," UMI Dissertation #3469489, 2011. [thesis committee].
- Alexander Stine (Department of Earth and Planetary Science, University of California, Berkeley), 2007 – 2010. Thesis: "Climate Change at Annual Timescales," UMI Dissertation #3561357, 2010. [thesis committee].
- Frida Bender (Meteorological Institute, Stockholm University), 2008 – 2009. Thesis: "Earths Albedo in a Changing Climate." [Ph.D. dissertation disputation opponent]
- Michael Kiparsky (Energy and Resources Group, University of California, Berkeley), 2008 – 2010. Thesis: "Risk Analysis for Water Resources Under Climate Change, Population Growth, and Land Use Change," UMI Dissertation #3555762, 2010. [thesis committee].
- Abigail Swann, (Department of Earth and Planetary Science, University of California, Berkeley), 2008 – 2010. Thesis: "Ecoclimate: Variations, Interactions, and Teleconnections," UMI Dissertation #3527296, 2010. [thesis committee].
- Andrew Rollins, (Department of Chemistry, University of California, Berkeley), 2010 – 2010. Thesis: "Formation mechanisms and quantification of organic nitrates in atmospheric aerosol," UMI Dissertation #3413471, 2010. [thesis committee]
- Andrew Jones, (Energy and Resources Group, University of California, Berkeley), 2010 – 2012. Thesis: "Land Use Change is a Critical Influence on the Climate Effects of Climate Policies." [thesis committee].
- Zack Subin, (Energy and Resources Group, University of California, Berkeley), 2010 – 2012. Thesis: "Interactions of Water and Energy Mediate Responses of High-Latitude Terrestrial Ecosystems to Climate Change," UMI Dissertation #3594001, 2012. [thesis committee].
- Andrew Friedman, (Department of Geography, University of California, Berkeley), 2010 – 2014. Thesis: "The changing interhemispheric temperature difference: mechanisms and impacts." [thesis committee].
- Nadir Jeevanjee, (Department of Earth and Planetary Science, University of California, Berkeley), Atmospheric convection and dynamics, 2012 – present [thesis committee].
- Jacob Edman, (Department of Earth and Planetary Science, University of California, Berkeley), Atmospheric convection and dynamics, 2013 – present [thesis committee].

8.9 Ph.D. students

- Richard van Hees (University of Utrecht), 1995 – 2000. Thesis: "Detection of deep convection in the atmosphere using infrared satellite data." [co-promoter].
- David Fillmore, (Program in Atmospheric and Oceanic Sciences, University of Colorado, Boulder), 2000 – 2005. Thesis: "Anthropogenic aerosols and the scattering and absorption of solar radiation – Estimates of the climatic impacts through a synthesis of models and satellite observations," UMI Dissertation #3168276, 2005. [thesis adviser].
- Lindsey Nolan (Environmental Engineering, University of California, Berkeley), Climate-change prediction using perturbed physics, 2008 – 2011 [thesis adviser].
- Kyle Pressel (Environmental Engineering, University of California, Berkeley), 2008 – 2012. Thesis: "Water Vapor Variability Across Spatial Scales: Insights for Theory, Parameterization, and Model Assessment," UMI Dissertation #3527150, 2012. [thesis adviser].
- Juli Rubin (Environmental Engineering, University of California, Berkeley), 2009 – 2012. Thesis: "Investigation of Aerosol Sources, Lifetime and Radiative Forcing through Multi-Instrument Data Assimilation," UMI Dissertation #3555898, 2012. [thesis adviser].
- Daniele Rosa (Department of Earth and Planetary Science, University of California, Berkeley), 2008 – 2014. Thesis: "Multiscale global atmospheric transport and convective precipitation." [thesis adviser].
- Prabhat (Department of Earth and Planetary Science, University of California, Berkeley), Detection and future of extreme climate, 2011 – present [thesis adviser].
- Ben Fildier (Department of Earth and Planetary Science, University of California, Berkeley), Physics of climate extremes, 2013 – present [prospective thesis adviser].
- Jordan Mizerak (Department of Earth and Planetary Science, University of California, Berkeley), 2014 – present [prospective thesis adviser].

8.10 Postdoctoral researchers

- Daniel Feldman (Department of Earth and Planetary Science, University of California, Berkeley), CLARREO (CLimate Absolute Radiance and Refractivity Observatory) Observing System Simulation Experiment, 2008 – 2011.
- Lara Gunn, (Department of Earth and Planetary Science, University of California, Berkeley), The Longwave Radiative Effects of Aerosols from Synthesis of A-train Observations, 2010 – 2012.
- Wei-Chun Hsieh, (Department of Earth and Planetary Science, University of California, Berkeley), Multiscale Modeling of Atmospheric Processes, 2009 – 2012.
- Fuyu Li, (Climate Sciences Department, Lawrence Berkeley National Laboratory), Exploring and Quantifying Predictive Skill for Climate and its Extremes, 2010 – 2012.

- Lisa Murphy, (Climate Sciences Department, Lawrence Berkeley National Laboratory), Improving the Representation of Human-Earth System Interactions, 2010 – 2012.
- Gijs de Boer (Environmental Energy Technologies Division, Lawrence Berkeley National Laboratory), Measurement of cloud radiative effects on Arctic climate, 2010 – 2012.
- Andrew Jones, (Climate Sciences Department, Lawrence Berkeley National Laboratory), Interactions of land use, land cover, and climate change, 2012 – 2013.
- Travis O'Brien, (Climate Sciences Department, Lawrence Berkeley National Laboratory), Multiscale atmospheric dynamics and climate extremes, 2011 – 2013.
- Huei-Jin Wang, (Climate Sciences Department, Lawrence Berkeley National Laboratory), Measurement of carbon exchanges with terrestrial ecosystems, 2012 – 2014.
- Enhao Du, (Climate Sciences Department, Lawrence Berkeley National Laboratory), Impacts of terrestrial hydrology on anthropogenic climate change, 2013 – present.
- Soyoung Jeon, (Climate Sciences Department, Lawrence Berkeley National Laboratory), Spatial statistics of climate extremes, 2012 – present.
- Jennifer Holm, (Climate Sciences Department, Lawrence Berkeley National Laboratory), Implications of forest ecosystem dynamics for the carbon cycle, 2012 –present.

8.11 Guest lectures (since 2007)

- "Changes in Climate Extremes: History and Projections for the 21st Century," Boalt Law 272.3 (CCN 49711), Climate Change: Law and Policy, Sep. 4, 2007.
- "Global climate change: History and projections for the 21st century," Molecular And Cell Biology (MCELLBI) 90, Freshman Seminar, Sep. 25, 2007.
- "The Health Implications of Climate Change," Public Health 298.38 (CCN 76642), Global Environmental Change for Health Scientists, Feb. 22, 2008.
- "Global climate change: History and projections for the 21st century," Molecular And Cell Biology (MCELLBI) 15.001 (CCN 57709), Current Topics in the Biological Sciences, Apr. 8, 2008.
- "Radiative Forcing by Greenhouse Gases and its Representation in Global Models," Chemistry 122.001 (CCN 11450), Quantum Mechanics and Spectroscopy, Apr. 7, 2008.
- "Aerosols' Role in Radiative Transfer," Chemistry 122.001 (CCN 11450), Quantum Mechanics and Spectroscopy, Apr. 9, 2008.
- "What is a Climate Model (and what can it do?)," Environmental Science 10.001 (CCN 30403), Introduction to Environmental Sciences, Apr. 24, 2008.
- "The Global Greenhouse: Welcome to the Anthropocene," Earth and Planetary Science 3.001 (CCN 19003), The Water Planet, May 5, 2008.
- "Climate extremes: The future impacts of strange weather," Earth and Planetary Science 3.001 (CCN 19003), The Water Planet, May 7, 2008.

- "Changes in Climate Extremes: History and Projections for the 21st Century," Boalt Law 272.3 (CCN 49688), Climate Change and the Law, Aug. 8, 2008.
- "Radiative processes in climate and climate models," Research in Earth Science, EPS 260, 11/10/08.
- "What is a Climate Model? (And what can it do?)," Physical Science, L&S 70B, 2/24/09.
- "The global greenhouse: Welcome to the Anthropocene," "The Water Planet," EPS 3, 4/29/09.
- "Climate extremes: The future impacts of strange weather," "The Water Planet," EPS 3, 5/4/09.
- "Radiative processes." Geog. 171 (CCN 36601), Jan. 28, 2010.
- "What is a climate model, and what can it do?" ES (Environmental Sciences) 10 (CCN 30803), Feb. 12, 2010.
- "From climate change to climate action." Invited presenter for the Dept. of Earth and Planetary Science, Calday, April 17, 2010, UC Berkeley.
- "The global greenhouse: Welcome to the Anthropocene." EPS 3 (CCN 19003), April 26, 2010.
- "The Future of the Earth's Climate: Frontiers in Forecasting," ERG C200 and Public Policy C284, "Energy and Society," CCN 27425, Nov. 30, 2010.
- "What is a Climate Model? (And what can it do?)," Geography 171, "Special Topics in Physical Geography," CCN 36520, Mar. 3, 2011.
- "The Global Greenhouse: Welcome to the Anthropocene," EPS 3, "The Water Planet," CCN 19003, Apr. 20, 2011.
- "What is a Climate Model? (And what can it do?)," CE 195, "Chemical Engineering – Special Topics," CCN 10491, Sep. 13, 2011.
- "What is a Climate Model? (And what can it do?)," EPS 10, "Introduction to Environmental Science," CCN 30803, Sep. 24, 2011.
- "The Trajectory of the Earth's Climate," ChE 84, "The Science and Engineering of Sustainable Energy," CCN 10308, Mar. 1, 2012.
- "The Global Greenhouse: Welcome to the Anthropocene," EPS 3, "The Water Planet," CCN 19003, Apr. 23, 2012.
- "What is a Climate Model? (And what can it do?)," ERG 290, "Seminar in Energy and Resources," CCN 27430, Jan. 29, 2013.
- "The Global Greenhouse: Welcome to the Anthropocene," ESPM C10, "Environmental Issues," CCN 28856, Jan. 31, 2013.
- "The Global Greenhouse: Welcome to the Anthropocene," EPS 3, "The Water Planet," CCN 19003, Apr. 29, 2013.

- "Water and Climate Change," Political Science 179, "Undergraduate Colloquium in Political Science (Activism)," CCN 71877, 13 November 2013.
- "The Global Greenhouse: Welcome to the Anthropocene," EPS 3, "The Water Planet," CCN 19003, 18 April 2014.

8.12 Public dissemination of scientific information

- Invited lecturer, NCAR Geophysical Statistics Conference, Jul. 18–24, 1998.
- Invited presentation, Boulder County Clear-Air Consortium, Nov. 14,2000.
- Invited lecturer, NASA Goddard Graduate Student Summer Program, Jun. 11, 2002.
- Invited lecturer, NCAR ASP Colloquium on "Climate and Health," Jul. 21–28, 2004.
- Invited lecturer, Scripps Howard Institute on the Environment, 2005.
- Invited lecturer, NCAR ASP Colloquium on "The Art of Climate Modeling," Jun. 5–16, 2006.
- Invited lecturer, NCAR ASP Colloquium on "Climate and Health," Jul. 17, 2006.
- Interview subject, programs on climate change by the Discovery Channel, CNN and HBO, 2005–2006.
- Lead author, *Scientific American* article on IPCC WG 1 findings, 2007.
- Invited lecture, "Our Changing Planet: A Scientific Assessment," Montgomery Bell Academy, October 30, 2008, Nashville.
- Invited panelist, "Humanity's Greatest Challenges," Singularity University, Jul. 9 2009, NASA Ames, Moffett Field, CA.
- Invited lecture, "Climate change: Surf's up in the Arctic," Nano High, Oct 19, 2009, University of California, Berkeley.
- Invited participant, Climategate panel discussion, Climate and Energy Policy Institute, Haas School of Business, UC Berkeley, Jan. 26, 2010.
- Invited panelist, "Berkeley Lab Goes Hollywood," Science at the Theatre, Feb. 3, 2010, Berkeley Repertory Theater.
- IPCC Forum on the Fifth Assessment, ESPM, UC Berkeley, Nov. 28, 2012.
- Speaker, LBNL Science at the Theater presentation on "How Hot Will it Get," Berkeley Repertory Theater, California, April 22, 2013.
- Earth Day kickoff speaker on climate change, Lawrence Berkeley Laboratory, Berkeley, California, April 22, 2013.
- Co-organizer, Philomathia Symposium on Water, Climate, and Society: Strategies in a Rapidly Changing World. 1 Nov. 2013, David Brower Center, Berkeley, California.
- Chair, CRI kick-off summit, David Brower Center, 11 February 2014, Berkeley, California.
- Presentation on climate change to the Bentley Lab School on 25 February 2014.
- Lecture on "Water and Climate Change" on UC Berkeley Cal Day, 11 April 2014.

RESEARCH GRANTS:

9 Previous Research Support

1. Principal Investigator, "Improved Estimates of Clear-Sky Longwave Flux and Application to the Tropical Greenhouse Effect," Earth Science and Applications Division, NASA (NAGW-4777/S10144-X), 1996 – 2000, $127 K.

2. Principal Investigator (with Guang J. Zhang, Scripps Institution of Oceanography), "Investigation of the Warm Pool Heat Budget and Validation of Atmospheric GCMs using TOGA COARE Data," Atmospheric Sciences Division, NSF (ATM95-25800), 1996 – 1999, $240 K.

3. Principal Investigator, "Validation of the CERES Surface Radiation Budget Using Long-term Observations from the Indian Ocean Experiment (INDOEX)," Mission to Planet Earth Program Science Division, NASA (S-97889-F), 1997 – 2001, $265 K.

4. Co-Principal Investigator (with Philip Rasch, NCAR), "Aerosol Forecasting and Modeling for ACE-Asia," Climate Dynamics Program, NSF (NSF01 Special Funds), 2001 – 2002, $190 K.

5. Principal Investigator (with Brian Soden, GFDL/Princeton), "Improved Clear-Sky Top-of-Atmosphere Fluxes for Studies of the Greenhouse Effect and Aerosol Radiative Forcing," Office of Global Programs, NOAA (NA96GP0444), 1999 – 2003, $317 K.

6. Principal Investigator (with Francisco Valero, Scripps Institution of Oceanography), "Development of Radiative Modeling Capabilities for the Triana Satellite Program," Scripps Institution of Oceanography and Earth Science Enterprise, NASA (10189379), 2002 – 2004, $366 K.

7. Principal Investigator, "Global Aerosol Modeling for Climate Studies Using Assimilation of EOS Satellite Observations," Atmospheric Chemistry Modeling and Analysis Project, Office of Earth Science, NASA (W-19942), 2001 – 2005, $444 K.

8. Co-Investigator (with Andrew Vogelmann, Scripps Institution of Oceanography), "Parameterization of Cloud Water Variability from EOS Observations and its Impact on GCM Climate Simulations," Office of Earth Science, NASA (GWEC-0000-0086), 2001 – 2004, unfunded collaboration.

9. Co-Investigator (with Martin Mlynczak, NASA Langley Research Center), "Far Infrared Spectroscopy of the Troposphere (FIRST)," Instrument Incubator Program, Office of Earth Science, NASA, 2001 – 2004, unfunded collaboration.

10. Principal Investigator, "Engineering the Community Climate System Model for Improved Portability," NSF (ATM-0404790 under Cooperative Agreement number ATM-0301213), 2003 – 2006, $281.9 K.

11. Co-Investigator (with Bruce Wielicki, NASA Langley Research Center), "CERES (Clouds and the Earth's Radiative Energy System) Climate Data Records: Development, Maintenance, and Validation," Office of Earth Science, NASA (NNL04AA54I), 2004 – 2006, $230 K.

12. Co-Investigator (with Bob Malone, LANL; and John Drake, ORNL), "Collaborative Design and Development of the CCSM for Terascale Computers," DOE Scientific Discovery through Advanced Computing (SciDAC) program (DE-FG03-02ER63387), 2002 – 2007, $2.412 M.

13. Co-Investigator (with Cecelia Deluca, NCAR), "Common Modeling Infrastructure in Support of U.S. Climate Change Science," NASA Earth Science Enterprise (NNG06GB74G), 2005 – 2008, $405 K.

14. Institutional Co-Principal Investigator (with lead PIs John Drake, ORNL; and Phil Jones, LLNL), "A Scalable and Extensible Earth System Model for Climate Change Research," DOE Scientific Discovery through Advanced Computing (SciDAC) program, 2006 – 2008, $4.085 M.

15. Co-Investigator (with Scott Doney, WHOI), "Ocean Biological Feedbacks on Global Coupled Climate-Carbon Cycle Dynamics," NASA Interdisciplinary Science program, 2007 – 2007, $370.3 K.

16. Principal Investigator, "Detection and Attribution of Spectral TOA Forcings and Feedbacks: a CLARREO Observing System Simulation Experiment," NASA (NNX08AT80G and NNX10AK27G) and UCSC (NAS-2-03144,), 2008 – 2011, $252,047.

17. Co-Investigator (with Ricky Rood, University of Michigan), "Process-Based and Object-Based Investigation of Bias in the Simulations of the Physical Climate," NASA Earth System Science Research using Data and Products from the Terra, Aqua, and ACRIM-SAT Satellites (UM-03000913901), 11/1/2007 – 6/30/2011, $57,237.

18. Laboratory Principal Investigator (with David Bader, ORNL; Philip Jones, LANL; and Kenneth Sperber, LLNL), Exploring and Quantifying Predictive Skill for Climate and Its Extremes on Decadal and Regional Scales, DOE BER, 6/1/2009 – 9/30/2009, $318,500.

19. Co-Investigator (with Kuan-man Xu, NASA Langley Research Center), "Aerosol Indirect Effect: Unscrambling Dynamics and Aerosol Effect," NASA Interdisciplinary Science program (NNX07AU78G), 7/1/2007 – 6/30/2011, $195,000.

20. Principal Investigator (with Irina Sokolik, Georgia Tech), "The Longwave Radiative Effects of Aerosols from Synthesis of A-train Observations," NASA Atmospheric Chemistry, Modeling, and Analysis Program (NNX08AK56G), 1/1/2008 – 12/31/2011, $359,819.

21. Laboratory Principal Investigator (with Rich Loft, NCAR), "Collaborative Research: PetaApps: New Coupling Strategies and Capabilities for Petascale Climate Modeling," NSF (OCI0749190), 3/1/2008 – 2/28/2011, $391,130.

22. Principal Investigator, (William Riley, LBNL; Margaret Torn, LBNL; Matt Reagan, LBNL; Philip Jones, LANL; William Lipscomb, LANL; Philip Cameron-Smith, LLNL; Robert Jacob, ANL; and Ruby Leung, PNNL), "Investigation of the Magnitudes and Probabilities of Abrupt Climate TransitionS (IMPACTS)," DOE, 7/1/2008 – 6/30/2013, $3,661,000.

23. Laboratory Co-Principal Investigator (with Philip Jones, LANL; Philip Rasch, PNNL; Steve Klein, LLNL; and Surabi Menon, LBNL), "Improving the Characterization of Clouds, Aerosols, and Cryosphere in Climate Models," DOE BER, 6/1/2009 – 5/1/2014, $1,660,411.

24. Laboratory Co-Principal Investigator (with Esmond Ng, LBNL), "High Performance Adaptive Algorithms for Ice Sheet Modeling," DOE ASCR, 9/1/2009 – 8/31/2013, $1,920,000.

25. Laboratory Principal Investigator (with David Bader, ORNL; Philip Jones, LANL; and Kenneth Sperber, LLNL), "Ultra High Resolution Global Climate Simulation to Explore and Quantify Predictive Skill for Climate Means, Variability and Extremes," DOE BER, 12/1/2009 – 9/30/2013, $2,949,324.

26. Laboratory Principal Investigator (with Ruby Leung, PNNL), "Development of Frameworks for Robust Regional Climate Modeling," DOE BER, 7/1/2010 – 6/30/2013, $1,650,000.

27. Laboratory Co-Principal Investigator (with Wes Bethel, LBNL), "Visual Data Exploration and Analysis of Ultra-large Climate," DOE BER, 7/1/2010 – 6/30/2013, $2,149,741.

28. Laboratory Co-Principal Investigator (with William Riley, LBNL), "Quantification and reduction of critical uncertainties associated with carbon," 7/1/2010 – 6/30/2013, $1,200,000.

29. Laboratory Principal Investigator (with John Weyant, Stanford University), "Integrated Assessment Model Development, Intercomparison and Diagnostics," DOE BER, 7/1/2010 – 6/30/2013, $375,000.

30. Principal Investigator, "Shortwave and Pan-Spectral Observing System Simulation Experiments in Support of the CLARREO Science Definition Team," NASA, 3/1/2011 – 3/1/2012, $225,301.

31. Laboratory Principal Investigator (with David Bader, LLNL), "Climate Energy for a Sustainable Energy Future (CSSEF)," DOE BER, 6/30/2011 – 3/31/2014, $625,000.

32. Laboratory Research Manager, "Climate and Earth System Modeling (CESM) Scientific Focus Area," DOE BER, 10/1/2011 – 3/31/3014, $9.7M.

10 Current External Research Support

1. Co-Investigator (with David Randall, Colorado State University), "Center for Multiscale Modeling of Atmospheric Processes," NSF via sub-contract with Colorado State University (CSU-G-3045-16), 2007 – 2017, $533 K (LBNL funding).

2. Laboratory Principal Investigator (with Jae Edmonds, PNNL and David Bader, ORNL), "Improving the Representations of Human-Earth System Interactions," DOE BER, 6/1/2009 – 9/30/2014, $3,275,056.

3. Principal Investigator (multi-lab), "Multiscale: Multiscale Methods for Accurate, Efficient, and Scale-Aware Models of the Earth System," DOE/BER, 7/15/2012 – 7/14/2017, $5.742M (LBNL funding).

4. Laboratory Research Manager, "CASCADE: Calibrated and Systematic Characterization, Attribution, and Detection of Extremes Scientific Focus Area," DOE BER, 10/1/2013 – 9/30/3016, $6.6M.

5. Chief Scientist and Laboratory Principal Investigator (Lead Lab PI: Dave Bader, LLNL), "ACME: Accelerated Climate Model for Energy Scientific Focus Area," DOE BER, 7/1/2014 – 6/31/2017, $7.5M (LBNL funding).

6. Principal Investigator, "Towards Integrated Assessment of Energy/ Water/ Climate Interactions," DOE BER, 6/1/2012 – 5/31/2015, $1.152M.

7. Laboratory Principal Investigator (with PI Robert Pincus, NOAA and CSU), "Centralized activities in support of the Radiative Forcing Model Intercomparison Project," DOE SC/BER (SciDAC DE-FOA-0001036), 11/1/2014 – 10/31/2017, $293 K (LBNL funding).

8. Laboratory Principal Investigator (with PI Joao Teixeira, UCLA and JPL), "An Integrative Parameterization of Boundary Layer and Convective Mixing: The Eddy-Diffusivity/Mass-Flux (EDMF) Approach," DOE SC/BER (SciDAC DE-FOA-0001036), 10/1/2014 – 9/30/2017, $225 K (LBNL funding).

11 Pending External Research Support

1. Principal Investigator (multi campus), "SRN: Climate Readiness for Coastal Cities," submitted to NSF RFP 14-534 for Sustainability Research Networks (SRNs), 9/15/2014 – 9/14/2019, $12M (all organizations).

2. Principal Investigator (multi campus), "MRPI: Climate Readiness for Bay Area Communities," submitted to UCOP RFP Multicampus Research Programs and Initiatives (MRPI) Multi-Year Program Award, 1/1/2015 – 12/31/2018, $3,480,605 (all organizations).